Mel and Enid Zuckerman College of Public Health  
University of Arizona  

SYLLABUS  

Advanced Epidemiology  
EPID/CPH 573C  
Fall Semester 2012

Time: Monday 2:00 – 4:50 p.m.

Location: Drachman Hall A-112

Instructors: Zhao Chen, PhD, MPH  
Professor of Public Health  
1295 N. Martin  
Drachman Hall, A238  
Tucson, AZ 85724  
Telephone: 626-9011  
zchen@email.arizona.edu

Office Hours: By Appointment

Teaching Assistant: None

TA Office Hours: N/A

Catalog Description: 
An advanced course in quantitative issues that arise in the planning, analysis, and interpretation of epidemiologic research studies. Students must also know how to use a statistical software package (e.g. STATA).

Course Description: 
Through homework and class projects, students will gain hands-on experience of epidemiologic research.

Course Prerequisites:

Statistics:  
Epidemiology 576A (Biostatistics for Public Health)  
Epidemiology 576B (Biostatistics for Research)

Epidemiology:  
Epidemiology 573A (Basic Principles in Epidemiology)  
Epidemiology 573B (Epidemiologic Methods)

Computing:  
Ability to use statistical computing packages (e.g. Stata, SAS, S-plus, or SPSS)
**Course Learning Objectives:** At the end of the course students should be able to better:

1. Interpret disease frequency, association, and effect as commonly considered in epidemiologic studies;
2. Critically evaluate the validity of proposed and completed studies, addressing potential sources of bias:
   (a) selection (response) bias,
   (b) information bias,
   (c) confounding;
3. Understand the advantages of stratification, matching, and statistical adjustment for control of confounding;
4. Understand the value of the randomized clinical trial as an epidemiologic resource;
5. Understand the application of the graphical representation of causality in epidemiology;
6. Identify research questions and form research hypotheses;
7. Plan and perform statistical analyses in epidemiologic research; and
8. Communicate epidemiologic research findings in both oral and written formats.

**MPH/SECTION Competencies Covered:**
The class will cover all the MPH competencies under analytical, communication, cultural and basic public health science skills. [http://www.publichealth.arizona.edu/academics/mph](http://www.publichealth.arizona.edu/academics/mph)

**Required Textbook:**

**Recommended Textbook:**

**Course Requirements:**
Students are required to actively participate in class discussion and to collaboratively work in a group during the semester. Class assignments, including reading assignments, must be completed before each lecture.

**Assignments**
a. Reading: Book chapters and papers are listed corresponding to each lecture in the course schedule. Students are expected to read each of the assigned book chapters
before the lecture and be ready to discuss them in class. The papers are recommended readings and supplementary to the book chapter.

b. Homework: There are three computer-based homework assignments throughout the semester. You are expected to complete all these homework assignments and discuss the results in class. In addition, you will be given papers to read and prepare for class discussions.

c. Midterm: midterm will be a take-home exam. You will be asked to read an epidemiologic research paper and answer questions related to the paper.

d. Course project:
• Throughout the semester, you will be working with a group of students on an epidemiologic dataset to test a hypothesis that you have formed.
• You will write and submit an abstract to report your findings at an in-class scientific conference. Per the conference assignment, you will give either an oral or a poster presentation. The abstract and presentation will be individual work based on the analyses done by the group.
• A completed manuscript based on your findings in the research project will be due by the end of the semester. The paper will be a group work.

e. Final exam --- critique presentation: You are responsible for presenting a critique review of a significant epidemiology paper (20 minutes). You are encouraged to select one paper from the list provided. You must let Dr. Chen know as soon as possible so she will reserve the paper for you. One student one paper and first come first serve. However, you may pick up your own paper if you are not interested in any of these papers in the list. In that case, you must show the paper to Dr. Chen for approval before you start your critique review.

Course Format: This class will be a combination of lectures and student presentations.

Student Evaluation:
- 5% Class participation (individual work)
- 15% Homework (individual work)
- 25% Midterm exam (individual work)
- 10% Research abstract and presentation (individual work)
- 20% Final exam ---critique presentation (individual work)
- 25% Manuscript (group work)

Class Attendance/Participation: Required. Prior permission from the course director should be received for any absence unless in emergence situations. Students who miss class without an instructor’s permission or who have 2 or more absences during the semester may receive a deduction of the final grade. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean’s designee) will be honored.
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<th>#</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Assignment</th>
<th>Due</th>
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| 1 | August 20 | • Introduction  
      • Literature review and hypotheses  
      • Class project overview | R₁, C₁  | Class project      |                               |
| 2 | August 27 | • Disease incidence and risk  
      • Measuring associations with consideration of validity and bias | R₂, C₂-₄ | H₁                  |                               |
|    |            | • Literature review and hypotheses                                    |         |                     |                               |
|    | September 3| • Labor Day, no class                                                 |         |                     |                               |
| 3 | September 10 | • Noncausal associations: confounding  
                      • Project hypotheses and literature review results  
                      • Discuss H₁ | R₃, C₅  |                     |                               |
| 4 | September 17 | • Effect modifications and interactions  
                        • Statistical modeling in epidemiology | R₄, C₆-₇ | H₂                  |                               |
| 5 | September 24 | • Discuss the analysis plan for the manuscript  
                       • Discuss H2 |         |                     |                               |
| 6 | October 1  | • Measurement errors  
      • Data management                                                   | C₈      |                     |                               |
| 7 | October 8  | • Causal diagrams  
      • Conceptual framework  
      • H₃                                                                  | R₅      |                     |                               |
| 8 | October 15 | • Use genetic approaches in epidemiologic studies (Guest Lecture)   |         |                     |                               |
| 9 | October 22 | • Reporting epidemiologic research                                   | R₆, C₉  |                     |                               |
| 10| October 29 | • Review abstracts  
                     • Epidemiologic inferences and public health implications | R₇, C₁₀ | poster or slides    | Abstract                      |
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<tr>
<td>11</td>
<td>November 5</td>
<td>• Class project presentation—Oral or Poster</td>
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<td>Poster or oral presentation</td>
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<td>November 12</td>
<td>• Veterans Day (no class)</td>
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<td>12</td>
<td>November 19</td>
<td>• Review the draft of the manuscript</td>
<td>R₈</td>
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<td>Draft of the manuscript</td>
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<td>• Multicenter studies</td>
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<td>13</td>
<td>November 26</td>
<td>• Grant application</td>
<td>R₉</td>
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<td>• Student final presentations</td>
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<td>14</td>
<td>December 3</td>
<td>• Student final presentations</td>
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<tr>
<td>15</td>
<td>December 10</td>
<td>• Student final presentations</td>
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<td>Final manuscript</td>
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R₁₋₉ = Readings on D2L  
C₁₋₁₀ = Chapters in the required textbook  
H₁₋₃ = Homework on D2L

**Communications:** You are responsible for reading emails sent to your UA account from your professor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at: [http://www.registrar.arizona.edu/emailpolicy.htm](http://www.registrar.arizona.edu/emailpolicy.htm)

**Disability Accommodation:** If you anticipate issues related to the format or requirements of this course, please meet with me. I would like us to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Resources (621-3268; drc.arizona.edu) and notify me of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations. The official policy can be found at: [http://catalog.arizona.edu/2012%2D13/policies/disability.htm](http://catalog.arizona.edu/2012%2D13/policies/disability.htm)

**Academic Integrity:** All UA students are responsible for upholding the University of Arizona Code of Academic Integrity, available through the office of the Dean of Students and online: The official policy found at: [http://deanofstudents.arizona.edu/codeofacademicintegrity](http://deanofstudents.arizona.edu/codeofacademicintegrity)

**Classroom Behavior:** (Statement of expected behavior and respectful exchange of ideas)  
The Dean of Students has set up expected standards for student behaviors and has defined and identified what is disruptive and threatening behavior. This information is available at: [http://deanofstudents.arizona.edu/disruptiveandthreateningstudentguidelines](http://deanofstudents.arizona.edu/disruptiveandthreateningstudentguidelines)

Students are expected to be familiar with the UA Policy on Disruptive and Threatening Student Behavior in an Instructional Setting found at: [http://policy.arizona.edu/disruptive-behavior-](http://policy.arizona.edu/disruptive-behavior-).
instructional and the Policy on Threatening Behavior by Students found at: http://deanofstudents.arizona.edu/sites/deanofstudents.arizona.edu/files/Disruptive_threat_bklt_2012.pdf

**Grievance Policy**: Should a student feel he or she has been treated unfairly, there are a number of resources available. With few exceptions, students should first attempt to resolve difficulties informally by bringing those concerns directly to the person responsible for the action, or with the student's graduate advisor, Assistant Dean for Student and Alumni Affairs, department head, or the immediate supervisor of the person responsible for the action. If the problem cannot be resolved informally, the student may file a formal grievance using the Graduate College Grievance Policy found at: http://grad.arizona.edu/academics/policies/academic-policies/grievance-policy

**Grade Appeal Policy**: http://catalog.arizona.edu/2012-13/policies/gradappeal.htm

**Syllabus Changes**: Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate.
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